

CLAIMS

1. A hydraulic power plant for generating electrical energy by transforming hydraulic energy of a water flow by means of a hydraulic turbine comprising at least

- a rotor,
- a generator driven by the rotor and
- a float for the hydraulic turbine,

wherein the hydraulic turbine is anchored in a fixed position and the rotor is aligned in the direction of flow of the water, characterised in that the hydraulic turbine (1) is held in a floating state underneath the surface of the water and that for this purpose the float (4) can be acted upon with a gaseous medium, e.g., compressed air and if necessary, flooded with water.

2. The hydraulic power plant according to claim 1, characterised in that the rotor (2) is mounted on a rotor axle (7) aligned in the direction of flow of the water and its rotor blades (8) can be adjusted by means of an adjusting mechanism (9) in or opposite to the direction of flow.
3. The hydraulic power plant according to claim 1 or 2, characterised in that the rotor axle (7) is constructed as a hollow axle and forms the float (4).
4. The hydraulic power plant according to any one of claims 1 to 3, characterised in that the rotor blades (8) of the rotor (2) mounted rotationally fixedly on the rotor axles (7) can be swivelled in the direction

of flow and are held against the flow pressure by means of spring loading and when the flow pressure exceeds a predetermined amount, they are successively swivelled in the direction of flow whilst reducing the leading surface.

5. The hydraulic power plant according to any one of claims 1 to 4, characterised in that the rotor blades (8) are supported on their side facing away from the flow by means of supporting lugs (10) against splayed-out leaf springs (11) which are distributed over the circumference of the rotor axles (7) and are affixed to the rotor axle (7).
6. The hydraulic power plant according to any one of claims 1 to 4, characterised in that a thrust bearing (12) is arranged on the rotor axle (7), that steering levers (13) are pivoted on the rotor blades (8), the steering levers (13) are pivoted on a bearing ring (14) displaceable on the rotor axle (7) in the longitudinal direction of the axis, and that a compression spring (15) surrounding the rotor axle (7) is arranged between the thrust bearing (12) and the bearing ring (14), which compression spring acts on the rotor blades (8) via the steering levers (13) and against the direction of flow of the water.
7. The hydraulic power plant according to any one of claims 1 to 4 or 6, characterised in that at least at the front and rear axial ends the rotor axle (7) is constructed as a spindle axle (7a, 7b) and that the thrust bearing (12) and/or the bearing (16) for the rotor blades (8) are constructed as spindle nuts which can be adjusted and stopped on the spindle axle (7a, 7b).

8. The hydraulic power plant according to any one of claims 1 to 4 or 6, characterised in that a compression spring (15') or tension spring surrounding the spindle axle (7) is arranged between the bearing ring (14) and the bearing (16) for the rotor blades (8), and the bearing ring (14) as well as the bearing (16) for the rotor blades (8) are constructed as spindle nuts.
9. The hydraulic power plant according to any one of claims 1 to 8, characterised in that a plurality of rotors (2) each having an adjusting mechanism (9) is arranged on the rotor axles (7) at predetermined distances.
10. The hydraulic power plant according to claim 9, characterised in that the outside diameters of the rotors (2) or their rotor blades (8) increase by a pre-determined gradation in the direction of flow of the water and exceed the previously arranged rotors (2) in each case.
11. The hydraulic power plant according to any one of claims 1 to 10, characterised in that the rotor axle (7) is constructed as a conically expanding hollow axle in the direction of flow of the water.
12. The hydraulic power plant according to any one of claims 1 to 11, characterised in that the hollow axle (7) is built up of axial sections (18) forming hollow chambers (17), each having a rotor (2) and an adjusting mechanism (9) and can be extended by further axial sections (18), wherein the axial sections (18) can be connected to one another by means of gas- or air-tight and water-tight flange connections (19).

13. The hydraulic power plant according to any one of claims 1 to 12, characterised in that the rotor axle (7) is supported at predetermined distances by means of guide bearings (20).
14. The hydraulic power plant according to any one of claims 1 to 13, characterised in that the rear end of the rotor axle (7) in the direction of flow has a tail unit (21).
15. The hydraulic power plant according to any one of claims 1 to 14, characterised in that the generator (3) is arranged in a housing (22), e.g., a housing formed of half-shells with external cooling ribs (23).
16. The hydraulic power plant according to any one of claims 1 to 15, characterised in that a plurality of generators (3) are arranged and coupled one after the other in a row and are connected to the rotor axle (7).
17. The hydraulic power plant according to any one of claims 15 or 16, characterised in that a hollow flow cone (24) is flange-mounted to the housing (22) on the leading edge.
18. The hydraulic power plant according to any one of claims 1 to 17, characterised in that the float (4) is formed by the hollow axle (7), if appropriate the housing (22) and the flow cone (24).
19. The hydraulic power plant according to any one of claims 1 to 17, characterised in that the float (4) is formed by a framework (25) with hollow supports (26) and/or boxes and if appropriate, skids (27) for one or a plurality of hydraulic turbines (1).

20. The hydraulic power plant according to any one of claims 1 to 19, characterised in that one or a plurality of gas or compressed air lines (28) are connected to the floodable float (4).
21. The hydraulic power plant according to any one of claims 1 to 20, characterised in that a plurality of hydraulic turbines (1) are arranged next to one another in a row and/or in an offset arrangement one after the other and/or one above the other and if appropriate are connected to one another by means of flexible or elastic connecting means (29).
22. The hydraulic power plant according to any one of claims 1 to 21, characterised in that the hydraulic turbine(s) (1) are anchored by means of chains, ropes (30) or the like on the bank (31) and/or the bottom (32) of the water at fixed points (5).